



# THE 1998 NATIONAL CENSUS OF PINK-FOOTED GEESE AND ICELANDIC GREYLAG GEESE IN BRITAIN & IRELAND

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## SUMMARY

The 39th consecutive winter census of Pink-footed Geese and Icelandic Greylag Geese took place in Britain and Ireland during autumn and early winter 1998. Two discrete counts were undertaken and maxima of 229,408 Pink-footed Geese were recorded in October and 83,096 Greylag Geese in November. Both censuses were carried out under good conditions and consequently are believed to be accurate. One important Greylag Goose roost was not counted and this is discussed. The suggested population estimates are therefore 230,000 for Pink-footed Goose and 83,500 for Greylag Goose. Estimates of the number of Icelandic Greylag Geese in Ireland were received for the first time. The Pink-footed Goose count represents a decrease of 2.6% on the 1997 count, while the Greylag Goose count shows an increase of 4.6%, the first in five years. Both species had a more successful breeding season in comparison to the previous year: Pink-footed Goose flocks contained 20.3% young and mean brood size was 2.4 goslings per successful pair and Greylag Goose flocks contained 19.1% young and mean brood size was 2.9 goslings per successful pair.

## INTRODUCTION

The 39th consecutive census of Pink-footed Geese *Anser brachyrhynchus* and Icelandic Greylag Geese *A. anser* in Britain took place in autumn and early winter 1998. The methods used followed those of previous censuses, with two co-ordinated counts being undertaken. The first was in mid-October when Pink-footed Geese are more concentrated at fewer sites just after their arrival from Iceland and the second was in mid-November, by which time the later migration of Greylag Geese has been completed. Counts from Ireland were included for the first time. This report provides an overview of the results. More detailed data on individual sites or regions are available from WWT upon request.

## METHODS

Counts were conducted by a network of volunteer counters over the weekends of 17/18 October and 21/22 November 1998. They were timed to coincide with the new moons, thus minimising the effects of night-time feeding by geese on the census totals. Most counts were of roosting geese, either undertaken at dusk when the birds are flighting in or at dawn as they depart for feeding areas. In a small number of areas where roosting waters are poorly known, inaccessible or infrequently used, daytime counts of feeding birds were made. Assessments of the proportion of young in goose flocks and of brood size were made by experienced observers during the period 14 September to 22 November.

In Ireland, where there are a number of naturalised Greylag populations, a pre-census count to determine the post-breeding size of these was undertaken at those sites where confusion between naturalised and Icelandic Greylags may have arisen. This allowed the accurate assessment of the number of Icelandic migrants present during the November census.

## COVERAGE AND WEATHER CONDITIONS

A total of 144 sites were counted during the two censuses: 117 of these were counted in both months, seven only during October and 20 in November only. This is an increase of 8% on the number of sites covered by the 1997 survey. All important Pink-footed Goose roost sites were counted during the 1998 census, but one site that has supported significant numbers (> 1%) of the Greylag Goose population in recent years was left uncounted.

Supplementary counts were received from many of the major goose sites, most notably South-west Lancashire, the north Norfolk roosts (Snettisham, Scolt Head and Holkham), Solway Estuary, Carsebreck, Dupplin Loch, Montrose Basin, Haddo Country Park and the Island of Bute.

Weather conditions and disturbance levels were reported by counters as generally good and are not considered to have significantly affected the census results. However, low counts were reported from four sites in October and six in November, including two sites that held key concentrations of Greylag Geese. The full moons were on 5 October and 4 November.

## RESULTS

### Total Numbers

Census totals are illustrated in Figure 1 and detailed regional count totals are provided in Table 1.

#### *Pink-footed Goose*

The October census total of 229,408 is a decrease of 6,151 birds (2.6%) on the previous census in October 1997 (Hearn 1998). During the November census, just 7,405 fewer birds were counted, a far higher proportion (97%) of the October total than is normally achieved, as the birds are typically more dispersed later in the autumn.

#### *Greylag Goose*

The November census total of 83,096 is an increase of 3,619 birds (4.6%) on the 1997 population estimate (Hearn 1998). This represents the first increase in the population since 1993 and the highest level since 1994. However, this increase is not directly comparable with the 1997 population estimate as counts from Ireland are included for the first time. A total of 1,913 Icelandic Greylags were counted there during November 1998, however, the exclusion of these birds produces a population estimate for Britain of 81,183, which is still an increase of 1,706 birds (2.2%) over the 1997 census and still represents the first increase since 1993 and the highest level since 1995.

During November, low counts were reported from two sites that held more than 1% of the Greylag Goose population, namely Loch Spynie and Findhorn Bay.

The arrival of Greylags into Britain in 1998 occurred earlier than normal. Some 79,556 (95.7% of the November maximum) were counted during the October census.

The 1998 National Census of Pink-footed Geese and Icelandic Greylag Geese in Britain & Ireland

**Table 1. The regional distribution of numbers of Pink-footed Geese and Icelandic Greylag Geese recorded in Britain & Ireland in October and November 1998.**

Region	October			November		
	Sites	Pinkfoot	Greylag	Sites	Pinkfoot	Greylag
Ireland	0	nc	nc	7	0	1,913
Shetland	0	nc	nc	0	nc	nc
Orkney	9	142	18,110	8	25	17,873
Caithness	+	2	12,731	+	12	5,847
Sutherland	2	0	2,970	2	0	842
Ross & Cromarty	8	34	10,382	8	295	8,057
Inverness/Nairn	1	0	11	1	1,500	0
Badenoch & Strathspey	0	nc	nc	0	nc	nc
Moray	3	203	5,620	2	2,100	8,000
Banff & Buchan	1	35,370	0	1	19,302	393
Gordon/Aberdeen	3	16,423	9,890	3	10,401	8,259
Kincardine & Deeside	1	0	3,274	1	0	4,400
Angus/Dundee	8	28,110	3,050	9	43,687	1,240
Perth & Kinross	14	53,144	3,691	16	24,135	10,430
Stirling/Falkirk/Clackmannan	8	3,585	184	10	1,741	581
Fife	15	4,036	4,365	18	5,650	5,794
Argyll & Bute	3	2	892	4	0	1,826
Glasgow area*	3	12	1,216	3	0	1,005
Clydesdale	1	300	0	1	180	0
Stewartry/Wigtown	8	275	1,512	8	850	3,584
Annan & Eskdale/Nithsdale**	1	3,710	137	1	1,587	295
East/Mid Lothian	10	16,660	372	10	3,570	578
Edinburgh/West Lothian	1	0	74	1	0	0
West Borders/Tweeddale/East Borders***	9	30,994	275	9	6,212	420
N England/Humberside	8	7,681	800	8	4,816	1,759
Cumbria**	1	0	0	1	15	0
Lancashire & Merseyside	+	25,615	0	+	20,540	0
Lincolnshire	0	nc	nc	0	nc	nc
Norfolk	4	3,110	0	3	75,385	0
<b>Total</b>	<b>124</b>	<b>229,408</b>	<b>79,556</b>	<b>130</b>	<b>222,003</b>	<b>83,096</b>

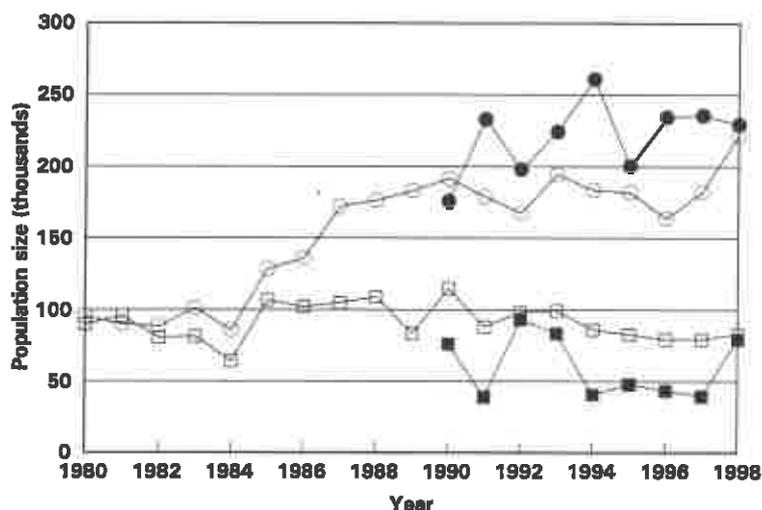
\* Includes Bearaden & Milngavie, Clydebank, Cumbernauld & Kilsyth, Cumnock & Doon Valley, Cunninghams, Dumberton, East Kilbride, Eastwood, Glasgow City, Hamilton, Inverclyde, Kilmarnock & Loudoun, Kyle & Carrick, Monklands, Motherwell, Renfrew and Strathkelvin

\*\* for convenience, counts from the Solway Firth are included in the Annandale & Eskdale/Nithsdale total even though some birds roost and feed on the Cumbrian side of the estuary

\*\*\* Includes Ettrick & Lauderdale, Roxburgh and Berwickshire

+ several feeding sites consolidated

nc no count received



**Figure 1.** The number of Pink-footed Geese (circles) and Icelandic Greylag Geese (squares) recorded during October (filled) and November (open) in Britain & Ireland since 1980. Note that pre-1998 totals do not include counts from Ireland.

### Regional Distribution

The regional distribution of geese during the two censuses is shown in Table 1 and summarised below in Table 2. Figures 2 and 3 illustrate this distribution.

**Table 2.** Gross regional distribution of Pink-footed Geese and Icelandic Greylag Geese in Britain & Ireland during October and November 1998, expressed as a percentage of the maximum count for each species.

Area (*)	Pink-footed Goose		Greylag Goose	
	October	November	October	November
Ireland	0	0	0	2.3
North Scotland	0.1	0.8	53.2	39.3
North-east Scotland	22.7	13.9	22.6	25.3
East Central Scotland	38.7	32.8	13.6	21.7
South-east Scotland/ North-east England	23.8	6.1	1.8	3.3
South-west Scotland/ North-west England	1.9	1.1	4.5	8.1
West England	11.2	8.9	0	0
East England	1.6	33.2	0	0
<b>Total</b>	<b>100.0</b>	<b>96.8</b>	<b>95.7</b>	<b>100.0</b>

- \* areas defined as follows:
- Ireland: all regions
  - North Scotland: Shetland, Orkney, Western Isles and Highland
  - North-East Scotland: Grampian (Aberdeenshire)
  - East Central Scotland: Tayside (Perth & Kinross), Central (Stirling) and Fife
  - South-East Scotland/North-East England: Lothian, Borders, Northumberland and Humberside
  - South-West Scotland/North-West England: Strathclyde, Dumfries & Galloway and Cumbria
  - West England: Lancashire and Merseyside
  - East England: Lincolnshire and Norfolk

### *Pink-footed Goose*

The regional distribution of Pinkfeet in 1998 was very similar to previous years. East Central Scotland supported the greatest proportion of the population during the October count, with North-east Scotland and South-east Scotland/North-east England each supporting almost a quarter of the birds. South-west Scotland/North-west England supported very few geese during autumn 1998, a reflection of the decreasing numbers of Pinkfeet frequenting the Solway Estuary at this time of year.

During November, a very high proportion of the October peak was counted. Almost one third were in the stronghold of East Central Scotland, whilst a further third were found in East England, where peak numbers of Pinkfeet are now occurring during late November and December.

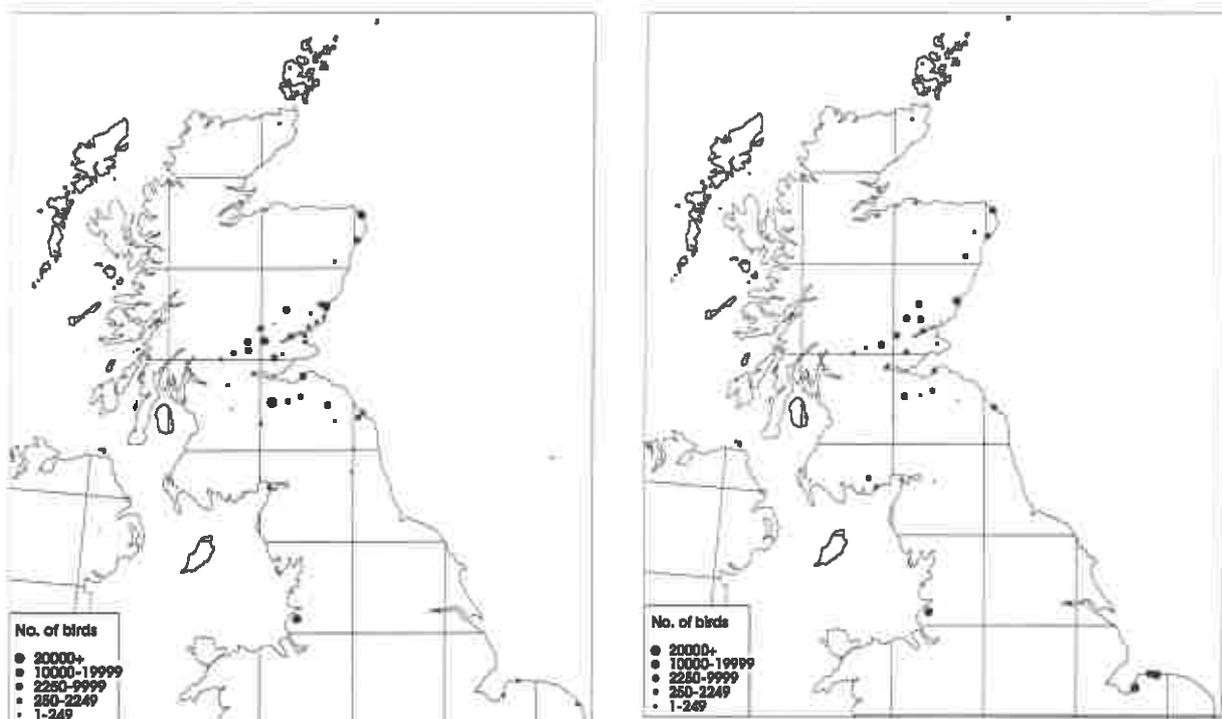


Figure 2. The distribution of Pink-footed Geese in October (left) and November (right) 1998.

### Greylag Goose

During the November census, the regional distribution of Greylags was typical, with the majority of the population found in North, North-east and East Central Scotland. The North-east region only held one quarter of the birds, where one third is more typical. Consequently, slightly more birds were found in the other two main regions.

The main difference in 1998 was the early arrival of Greylags. During the October count, more than half of the population was in North Scotland, and over 95% of the population were counted, some 79,556 birds. Typically, under 50,000 are present in Britain at this time of year.

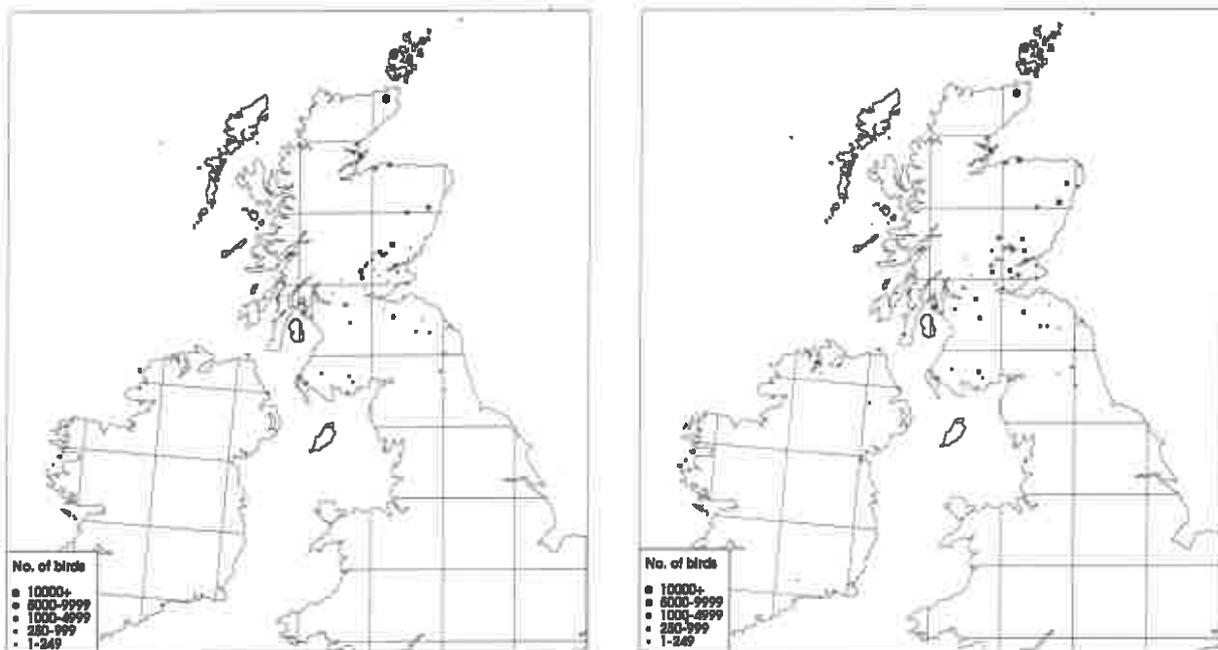


Figure 3. The distribution of Icelandic Greylag Geese in October (left) and November (right) 1998.

### Principal Concentrations

All sites that supported more than 1% of the Pink-footed Goose or Greylag Goose population census totals are shown in Table 3.

### Pink-footed Goose

During October, Pinkfeet were reported from a total of 53 sites, of which 48 held more than 10 birds. Eighteen sites held more than 1% of the census total (Table 3) and eight sites held more than 10,000 birds. Over 36% of the October census total was recorded from three of these: Loch of Strathbeg (35,370), South-west Lancashire (25,615) and Dupplin Lochs (22,000). Similarly, during November, 17 sites held more than 1% of the census total and more than 10,000 birds were found at seven sites. Three of these supported 40% of the total count : Holkham Bay (34,100), Montrose Basin (33,012) and Snettisham (25,335). In all, Pink-footed Geese were recorded at 63 locations during either the October or November censuses, one less than in 1997.

Of the eight sites supporting more than 10,000 Pinkfeet, all except Aberlady Bay held less than their mean five year peak count. The lowest percentage was recorded at Dupplin Lochs, where just

over half the average number of geese were recorded. Two other sites recorded notably few Pinkfeet, namely Carsebreck and Rhynd Lochs and the Solway Estuary, although the latter site is well recognised as supporting peak numbers of Pinkfeet during the spring. Other sites that supported atypically high numbers of Pinkfeet during autumn 1998 were Loch Tullybelton and Loch of Lintrathen, both in the Perth area where the numbers of Pinkfeet have been steadily increasing at a number of sites away from the key roosts. Also, high counts were noted at both Holburn Moss and Lindisfarne and Dun's Dish, although this latter site is likely to have held birds disturbed from Montrose Basin.

Away from the two main census periods, additional counts revealed a maxima of 76,355 at the combined north Norfolk roosts on 14 December. This is only 970 more birds than the November census and shows that Pinkfeet are still occurring in Norfolk earlier each year. The area held more than 45,000 Pinkfeet from early October to mid-January during winter 1998/99. In Lancashire, a peak of 36,260 occurred during mid-January (Forshaw 1999) and on the Solway Estuary, 15,570 were present during mid-February.

### *Greylag Goose*

The early arrival of Greylags into Britain during October 1998 predictably found the largest concentrations in the most northerly areas. A total of 18,110 were at sites in Orkney, with the majority (10,272) on the West Mainland. A further 12,731 were present in Caithness; 9,890 at Loch of Skene and 9,069 at Loch Eye. These four sites held 60% of the November census total. In all, Greylags were reported from a total of 65 sites during October, of which 13 held more than 1,000 birds.

By the time of the November census, the geese were more dispersed and were present at a total of 73 sites, of which 70 held more than ten birds. Nineteen sites supported more than 1% of the population (Table 3) and five of these held over 52% of the population, with one, Orkney, supporting over one fifth.

The importance of Orkney as a wintering site for Icelandic Greylag Geese continues to rise. This year, despite the peak five year mean having almost doubled, the area supported 167% of this figure. Of the other top six sites, all, with the exception of Loch Spynie which held slightly more Greylags than its five year peak mean, supported below average numbers of Greylags during the November census. In particular, Dinnet Lochs, traditionally the major site for Greylag Geese, supported just 18% of its five year peak mean (1994-98) during 1998. However, daily counts of this roost ceased at the end of winter 1997/98 and therefore it is not known whether greater numbers were present at other times during winter 1998/99.

The number of Greylags was high at several sites in south-east Scotland, most notably those areas around the Tay Estuary and upper Tay. Lochs Clunie and Marlee, Drummond Pond and Ballo Reservoir all supported greater than average numbers of Greylags during the November census.

**Table 3. Principal Pink-footed Goose and Icelandic Greylag Goose resorts in autumn 1998.** Columns show all counts from sites holding  $\geq 1\%$  of the 1998 population estimate for each species (A), the site count as a percentage of the census total (B), the site count as a percentage of five year peak mean counts (C) and five year peak mean counts (D) (these are calculated using all monthly counts [WeBS data] and additional counts, thus may appear larger than counts recorded in the autumn).

**PINK-FOOTED GOOSE**

October census total	229,408			
	A	B	C	D
Loch of Strathbeg	35,370	15.4	85	41,515
South-west Lancashire	25,615	11.2	77	33,350
Dupplin Lochs	22,000	9.6	52	41,970
West Water Reservoir	21,670	9.5	75	28,774
Montrose Basin	21,500	9.4	77	27,932
Meikle Loch, Slains	16,400	7.2	89	18,480
Loch Leven	14,100	6.2	87	16,208
Aberlady Bay	13,260	5.8	160	8,304
Hule Moss	9,300	4.1	65	14,335
Loch Tullybelton	8,100	3.5	169	4,791
Holburn Moss	4,350	1.9	171	2,550
Carsebreck and Rhynd Lochs	4,100	1.8	28	14,412
Solway Estuary	3,710	1.6	25	15,122
Loch of Lintrathen	2,890	1.3	193	1,496
Lindisfarne NNR	2,700	1.2	153	1,760
Drummond Pond	2,644	1.2	86	3,061
Inner Firth of Tay	2,477	1.1	69	3,604
Dun's Dish	2,300	1.0	333	691

**GREYLAG GOOSE**

November census total	83,096			
	A	B	C	D
Orkney (all sites)	17,873	21.5	167	10,678
Loch of Skene	7,600	9.2	69	10,953
Loch Spynie	6,500	7.8	118	5,500
Caithness	5,847	7.0	68	8,650
Loch Eye	5,505	6.6	70	7,836
Dinnet Lochs	4,400	5.3	18	24,915
Inner Firth of Tay	3,055	3.7	285	1,073
Drummond Pond	2,350	2.8	114	2,063
Marlee Loch	2,000	2.4	164	1,219
White Loch, Lochinch	1,927	2.3	168	1,146
Dornoch Firth	1,533	1.8	78	1,958
Findhorn Bay	1,500	1.8	62	2,437
Loch Clunie	1,500	1.8	151	992
Sites in Upper Tay	1,227	1.5	97	1,261
Lough Swilly	1,217	1.5	-	-
Island of Bute	1,055	1.3	49	2,140
Ballo Reservoir	1,000	1.2	232	432
Udale Bay	850	1.0	73	1,158
Loch Fleet	842	1.0	58	1,455

## Breeding Success

A total of 23,615 Pink-footed Geese and 6,472 Greylag Geese were aged at various localities throughout Scotland and north-west England between 14 September and 22 November. In addition, brood sizes were collected for 311 broods of Pinkfeet and 30 broods of Greylag Goose. Both breeding success and mean brood size were higher than in autumn 1997 for both species (Table 4 and Figures 4 and 5).

Pink-footed Goose flocks were estimated to contain 20.3% young and the mean brood size of successful pairs was 2.4 goslings. In comparison, Greylag Goose flocks contained slightly less young, 19.1%, but the mean brood size was higher at 2.9 goslings per successful pair.

**Table 4.** *The proportion of young and mean brood size of Pink-footed and Greylag Goose flocks in autumn 1998. (Regions defined in Table 2).*

	Region	Total aged	% Young	No. of broods	Mean brood size
Pink-footed Goose	North Scotland	681	14.5	-	-
	North-East Scotland	16,167	21.0	255	2.5
	East Central Scotland	4,060	20.0	15	2.5
	South-East Scotland	659	20.8	4	1.5
	South-West Scotland	470	19.1	25	1.9
	West England	191	20.4	2	2.5
	East England	1,387	15.4	10	2.0
	Total	23,615	20.3	311	2.4
Greylag Goose	North Scotland	4,517	16.9	13	2.8
	North-East Scotland	1,282	29.2	7	3.7
	East Central Scotland	332	13.3	6	2.8
	South-West Scotland	125	7.2	2	2.0
	South-East Scotland	216	20.8	2	2.0
	Total	6,472	19.1	30	2.9

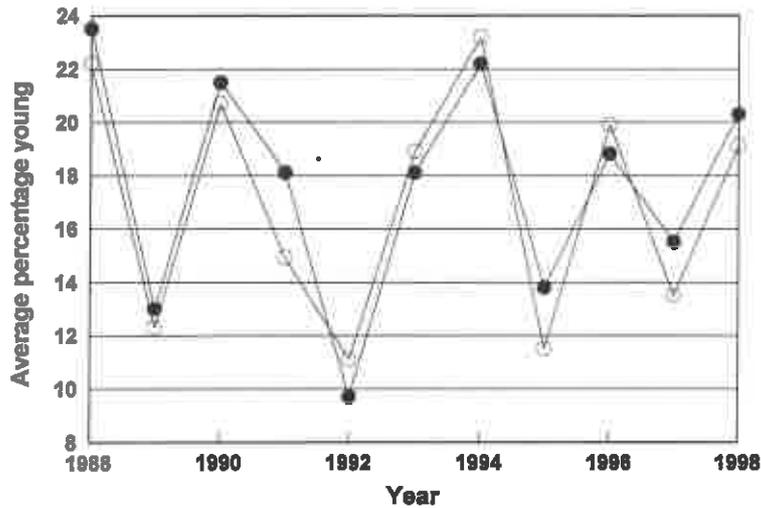


Figure 4. The proportion of young Pink-footed Geese (●) and Icelandic Greylag Geese (○) in Britain, 1988-1998.

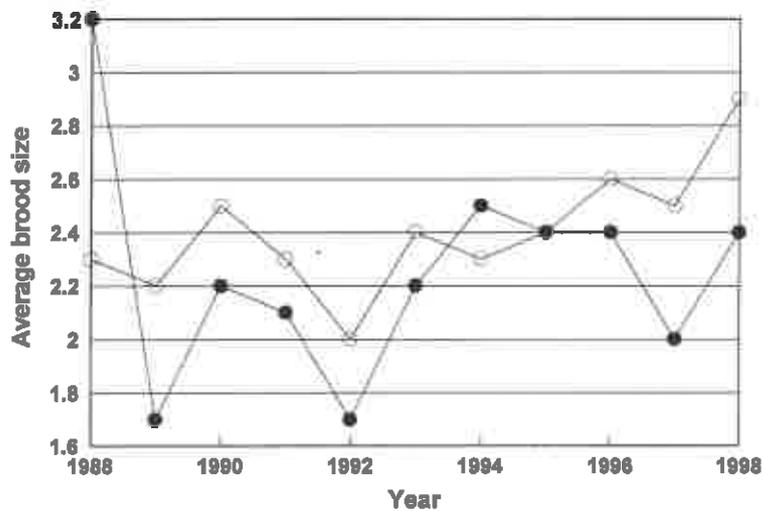


Figure 5. The mean brood size of successful pairs of Pink-footed Geese (●) and Icelandic Greylag Geese (○) in Britain, 1988-1998.

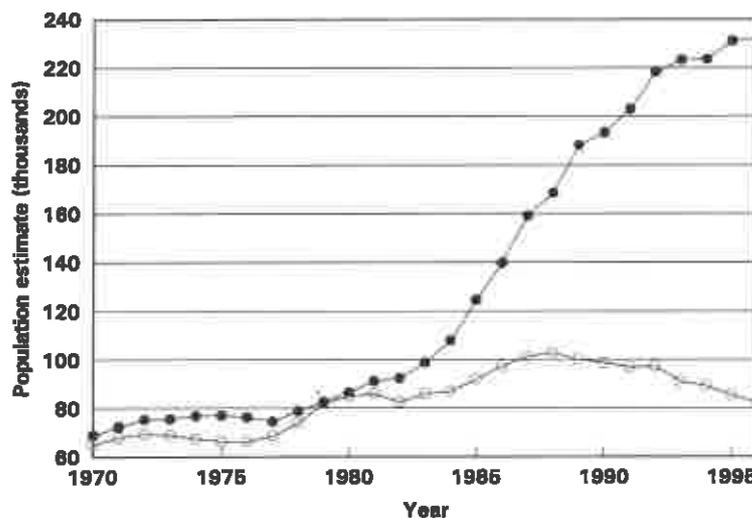
Regional inconsistencies in the number of geese sampled remains a problem, with the majority of Pinkfoot data obtained from North-east Scotland and very little from England, although a few samples were received from Lancashire and, although none were obtained from Norfolk, some from Humberside provided data from East England. As in 1997, brood size data proved hard to obtain for Greylag Geese.

## DISCUSSION

The 1998 national census of Pink-footed Geese and Icelandic Greylag Geese was conducted successfully during October and November. The weather conditions and levels of coverage were good and are not considered to have affected the results, which are thought to provide an accurate assessment of the size of these two populations.

Counts were not received from one site, Loch Garten, which has supported more than 1% of either population in recent years. In the five year period up to 1998, this site held a peak year mean of 1,268 Greylag Geese (Cranswick *et al.* 1999) and has consistently held more than 500 Greylags in recent years. It is thought that similar numbers are likely to have been present during 1998, consequently, the population estimate was adjusted to 83,500 to account for this.

The rise in the Greylag Goose population estimate is the first since 1993 and is the highest estimate since 1994. However, using five year running means (Figure 6), this count does not alter the trend of long-term decline in the population. During 1998, several new localities (those in Ireland) were counted for the first time, while only one site was not covered. The additional birds found at these sites account for much of the increase in the population estimate and it is known that Icelandic Greylags were present at these sites prior to 1998, consequently, they do not reflect an actual increase in the population. In addition, the high productivity during 1998 could have accounted for the additional 2.2% that were counted in Britain, but even without this, counts from year to year could be expected to fluctuate to this degree, as Greylags are well known to frequently roost on temporary floodwater and such sites, thereby evading being counted.



**Figure 6.** Population trends of Pink-footed Goose (●) and Icelandic Greylag Goose (○) since 1970, based on five year running means (ie mean for 1996 is from estimates for 1994-1998).

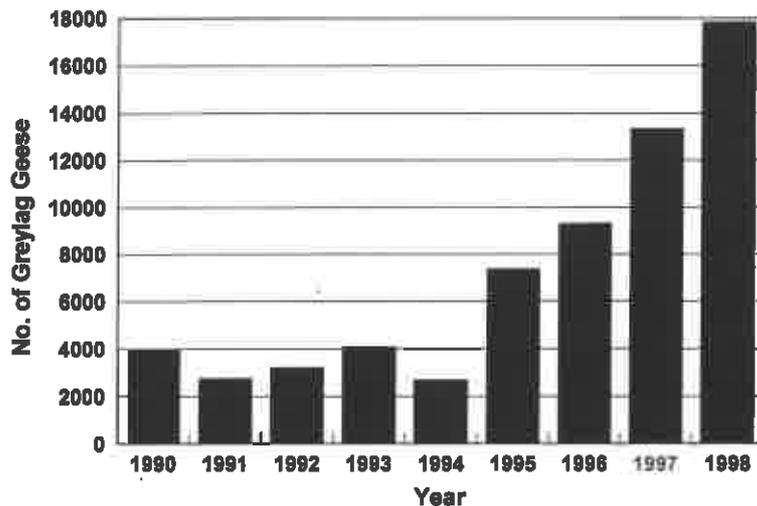
The increasing levels of goose hunting in Iceland detailed by Hearn (1998) continued to remain high during 1998. Although the exact number of geese shot there was not known prior to production of this report, they are expected to be very similar to previous years, with estimates of 35,000 Greylags and 15,000 Pinkfeet (Á Á Jónsson *in litt.*). It therefore appears that the education initiatives to encourage Icelandic hunters to take fewer Greylags have so far not had any real impact on the bag size.

Consequently, the Icelandic Greylag Goose population is still a cause of concern and is likely to remain so until more sustainable levels of hunting in Iceland can be attained. This is the one factor

most likely to result in a reversal of their declining population trend.

The Pink-footed Goose estimate for 1998 did not alter their increasing population trend (Figure 6), which has fluctuated around 230,000 since 1991. This population therefore appears to have remained stable during 1998.

The key sites for both species remained largely unchanged. The most significant difference is the continued increase in the number of Greylags wintering in Orkney (Figure 7). Since 1995/96, the number found there has increased rapidly and at a time when the overall population has been in slight decline. There is some evidence that, as a consequence, the number of Greylags frequenting more southerly sites may be decreasing. However, peak autumn counts have not changed markedly and it may be that Greylags are moving back north to areas like Orkney after their arrival. Ringing at Loch Eye has shown that Greylags move north to Orkney after their arrival into southern Highland (B. Swann pers. comm.).



**Figure 7.** *The number of Greylag Geese recorded in Orkney during the November grey goose census.*

The counts of Greylag Geese from Ireland provide increased accuracy of both the distribution and size of the Icelandic Greylag Goose population. Despite the presence of substantial numbers of naturalised Greylags at some of the areas where Icelandic birds also occur, the accuracy of these counts is not considered to have been compromised, as counts were conducted prior to the arrival of Icelandic migrants to assess the size of the post-breeding naturalised populations.

Other counts of Greylag Geese included in these results may have included some Greylags of non-Icelandic origins (ie from native or re-introduced populations). However, they are also considered to not greatly affect the overall population estimate.

The non-census counts for both species were very similar to the census count. It is typical for these to be considerably smaller as during October many Greylags have not arrived from Iceland, and during November, Pinkfeet are more dispersed and harder to locate during counts. The high October count of Greylags is not unprecedented, a similar proportion were counted in October 1992, but it is unusual. It is not known what may have caused such an early arrival into Britain, but it appears that the early departure from Iceland did not result in a smaller hunting bag.

The high November count of Pink-footed Geese is also not unprecedented, but may now be a consequence of the shifting patterns of mid-winter distribution in the species. It has been well

documented that an increasing proportion of the population can be found in Norfolk after mid-November (eg Gill *et al.* 1997) and the concentration of the birds at the three key roosts there, all of which are frequently counted, may have accounted for the high November count.

## COLOUR-MARKED GEESE

Pink-footed Geese and Icelandic Greylag Geese continue to be marked both in Iceland and Britain with plastic tarsus rings and neck collars. The principle areas in Britain where Pinkfeet have been marked are WWT Martin Mere (Lancashire), Loch Leven NNR (Perth & Kinross) and the north Solway coast (Dumfries & Galloway). Greylag Geese are marked predominantly at Loch Eye (Highland) and in north-east Iceland. Goose counters are asked to contribute their sightings to the addresses below. The colours and ring/collar codes to look out for are as follows:

- |          |   |
|----------|---|
| Pinkfeet | white or orange rings with three letters and grey neck collars with two or three characters   |
| Greylags | white or orange rings with two characters, light green rings with two or three letters and grey neck collars with two or three characters |

Please send sightings of colour-marked Pink-footed Geese (and any other wildfowl) to Colour Ring Sightings at WWT Slimbridge and sightings of colour-marked Greylag Geese to Bob Swann, 14 St Vincents Road, Tain, Ross-shire IV19 1JR.

## AUTUMN COUNTS 1999

The dates for the 1999 annual National Census are:

**9/10 October and 6/7 November**

If you have not received your count forms for this autumn then please contact the WeBS Secretariat at Slimbridge to obtain some.

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